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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/778,992	02/07/2001	Ross Halgren	41761/DBP/C664	2391

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EXAMINER

PAYNE, DAVID C

ART UNIT	PAPER NUMBER
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2633

DATE MAILED: 07/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/778,992

Applicant(s)

HALGREN, ROSS

Examiner

David C. Payne

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 08 March 2004 and 16 April 2004.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 8-21 and 23-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 8-21 and 23-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 June 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>7, 8, 11, 13</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 14 and 15 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. Applicant merely makes mention of a serial-parallel converter and look-up table (see application specification p. 5 lines 22-30) but does not provide any detail of how these components interconnect with the rest of the apparatus.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 14 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: serial-parallel converter and look-up table. Applicant has not described how these element inter-relate to each other or the rest of the apparatus and further more there is no drawing that shows these elements in the system.

***Drawings***

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the serial-parallel converter and look-up table must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claim(s) 8, 9, 12 and 13 is/are rejected under 35 U.S.C. 102(e) as being anticipated by Bala et al. US 6,272,154 B1 (Bala).

Re claim 8, 9 Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates (e.g., col./line: 3/15-20) and multiple different protocols (e.g., col./line: 4/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

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Re claims 12, 13, Bala disclosed extracting signal information used for signal processing at multiple different clock rates and multiple different protocols and performance monitoring (see Bala e.g., col./line: 6/40-50).

7. Claim(s) 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al. US 6,272,154 B1 (Bala).

Re claim 11, Bala disclosed the aforementioned invention but does not disclose a directly modulated laser. However it would have been obvious to one of ordinary skill in the art at the time of invention that this is the most common type of modulation and cheapest type of modulation used in the optical technology and is extremely well known in the art.

8. Claim(s) 10, 16, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al. US 6,272,154 B1 (Bala) in view of Johnston, Jr. US 6,101,204 (Johnston).

Re claim 17, Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for converting a plurality of demultiplexed optical signals to a plurality of corresponding electrical signals (251 of Figure 2, e.g., col./line: 6/15-20); an electronic switch (255 of Figure 2, e.g., col./line: 6/14-20) for transmitting a respective electrical signal to at least one of a plurality of output ports; and a plurality of electronic to optical (EO) interface units (258 of Figure 2, e.g., col./line: 6/45-50) at said plurality of output ports, a first port for receiving a signal (251a of Figure 2); and a second port (258 of Figure 2) for

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passing the respective signal to an external multiplexer (236a of Figure 2) for forming a combined optical data stream output.

Bala does not disclose each EO interface unit comprising: an externally generated laser signal, a modulator for modulating the respective received laser signal.

Johnston disclosed externally modulated lasers (e.g., col./line: 2/1-5) It would have been obvious to one of ordinary skill in the art at the time of invention to use externally modulated laser in the Bala invention for the benefit of obtaining wavelength as well as amplitude modulation as disclosed in Johnston (e.g., col./line: 2/9,10).

Re claim 10, the modified invention of Bala and Johnston as taught disclosed an externally modulated laser (see Johnston, e.g., col./line: 2/9,10).

Re claim 16, the modified invention of Bala and Johnston as taught disclosed a first demultiplexer (60 of Figure 8A) for demultiplexing a wavelength division multiplexed signal into a respective demultiplexed signal; and at least a first multiplexer (multiplexer in box 61 of Figure 8A) interconnected to the plurality of EO interface units for multiplexing optical output streams from a respective EO interface unit together to form a combined optical data stream output.

Re claim 18, the modified invention of Bala and Johnston as taught disclosed an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and a data and clock recovery circuit for

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recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates (e.g., col./line: 3/15-20) and multiple different protocols (e.g., col./line: 4/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

9. Claim(s) 19, 20 and 21 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Bala et al. US 6,272,154 B1 (Bala) in view of Yoo US 6,519,062 B1 (Yoo).

Re claim 19 Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for converting a plurality of demultiplexed optical signals to a plurality of corresponding electrical signals (251 of Figure 2, e.g., col./line: 6/15-20); an electronic switch (255 of Figure 2, e.g., col./line: 6/14-20) for transmitting a respective electrical signal to at least one of a plurality of output ports; and a plurality of electronic to optical (EO) interface units (258 of Figure 2, e.g., col./line: 6/45-50) at said plurality of output ports, a first port for receiving a signal (251a of Figure 2); and a second port (258 of Figure 2) for passing the respective signal to an external multiplexer (236a of Figure 2) for forming a



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combined optical data stream output.

Bala does not disclose a plurality of tunable laser sources and a modulator for modulating the respective received laser signal.

Yoo disclosed an external modulator (optical modulator of Figure 19) and tunable laser sources (see Yoo, e.g., col./line: 4/35-40). It would have been obvious to one of ordinary skill in the art at the time of invention to use externally modulated tunable lasers in the Bala invention for the benefit of obtaining stable multiple wavelengths from one source which reduces the failure points. (e.g., col./line: 2/9,10).

Re claim 20, the modified invention of Bala and Yoo as taught disclosed an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates (e.g., col./line: 3/15-20) and multiple different protocols (e.g., col./line: 4/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

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Re claim 21, the modified invention of Bala and Johnston as taught disclosed a first demultiplexer (60 of Figure 8A) for demultiplexing a wavelength division multiplexed signal into a respective demultiplexed signal; and at least a first multiplexer (multiplexer in box 61 of Figure 8A) interconnected to the plurality of EO interface units for multiplexing optical output streams from a respective EO interface unit together to form a combined optical data stream output.

10. Claim(s) 23 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over Kuroyanagi et al. US 6,433,900 B1 (Kuroyanagi) in view of Bala et al. US 6,272,154 B1 (Bala).

Re claim 23 Kuroyanagi taught

A fault tolerant optical switch apparatus comprising: at least a first demultiplexer (60 of Figure 8A) for demultiplexing a wavelength division multiplexed signal into corresponding spatially separated plurality of demultiplexed signals; at least a first multiplexer (multiplexer in box 61 of Figure 8A) for multiplexing a plurality of optical output streams to form a combined optical data stream output; a first (optical XC NODE 0-system of Figure 8A) and a second optical switch (optical XC NODE 1-system of Figure 8A), wherein the first demultiplexer and the first multiplexer are interconnected to the first and the second optical switches to provide fault tolerant operation.

Kuroyanagi does not disclose

each optical switch comprising: a plurality of optical to electronic (OE) interface units for

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receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal, and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal, said data and clock recovery circuit recovering data streamed at multiple different clock rates and multiple different protocols; an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal; and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively.

Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20), and a data and clock recovery circuit for recovery of data and corresponding clocking information from the corresponding electrical signal and outputting said data as a respective recovered electrical signal (254a of Figure 2, e.g., col./line: 6/34-36), said data and clock recovery circuit recovering data streamed at multiple different clock rates (e.g., col./line: 3/15-20) and multiple different protocols (e.g., col./line: 4/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports,

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respectively (258 of Figure 2, e.g., col./line: 6/45-50).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the OE conversion, clock data recovery of multi-rate/multi-protocol circuitry of Bala in the Kuroyanagi invention so that the switching system could serve a variety of communications technologies that are found in modern telecommunications networks.

11. Claim(s) 24, 25 is/are rejected under 35 U.S.C. 103(a) as being unpatentable over

Kuroyanagi et al. US 6,433,900 B1 (Kuroyanagi) in view of Bala et al. US 6,272,154 B1 (Bala) and Yoo US 6,519,062 B1 (Yoo).

Re claim 24 and 25 Kuroyanagi taught

A fault tolerant optical switch apparatus comprising: at least a first demultiplexer (60 of Figure 8A) for demultiplexing a wavelength division multiplexed signal into corresponding spatially separated plurality of demultiplexed signals; at least a first multiplexer (multiplexer in box 61 of Figure 8A) for multiplexing a plurality of optical output streams to form a combined optical data stream output; a first (optical XC NODE 0-system of Figure 8A) and a second optical switch (optical XC NODE 1-system of Figure 8A), wherein the first demultiplexer and the first multiplexer are interconnected to the first and the second optical switches to provide fault tolerant operation.

Kuroyanagi does not disclose

each optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit

comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal; an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal; and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively.

Bala taught An optical switch comprising: a plurality of optical to electronic (OE) interface units for receiving a plurality of demultiplexed signals respectively, each OE interface unit comprising: an OE converter for converting a respective demultiplexed signal to a corresponding electrical signal (251 of Figure 2, e.g., col./line: 6/15-20); an electronic switch for transmitting each of the respective recovered electrical signals to at least one of a plurality of output ports under control of an external control signal (255 of Figure 2, e.g., col./line: 6/14-20); and a plurality of electronic to optical (EO) interface units coupled to said plurality of output ports, respectively (258 of Figure 2, e.g., col./line: 6/45-50).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the OE conversion, clock data recovery of multi-rate/multi-protocol circuitry of Bala in the Kuroyanagi invention so that the switching system could serve a variety of communications technologies that are found in modern telecommunications networks.

Yoo disclosed an external modulator (optical modulator of Figure 19) and tunable laser sources (see Yoo, e.g., col./line: 4/35-40). It would have been obvious to one of ordinary skill in the art at the time of invention to use externally modulated tunable lasers in the Kuroyanagi invention for the benefit of obtaining stable multiple wavelengths from one source which reduces the failure points. (e.g., col./line: 2/9,10).

***Response to Arguments***

12. Applicant's arguments with respect to claims 8-21 and 23-25 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David C. Payne whose telephone number is (703) 306-0004. The examiner can normally be reached on M-F, 7a-4p.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on (703) 305-4729. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Dcp

  
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